

AMENDMENTS TO THE CLAIMS

Claim 1. (Currently amended) An optical head device comprising:
an objective lens for bringing light emitted from a light source into focus on an information recording medium;
a lens holder for holding said objective lens, said lens holder having a bearing hole formed along a direction parallel to an optical axis of said objective lens, the bearing hole is formed such that a shape from the bearing hole's center-bottom opening to the bearing hole's top openings is a ~~cone~~ parabolic shape such that a diameter of the bearing hole's top opening and bottom opening ~~are~~ is larger than that of the diameter of the center distance between the bearing hole's-center top opening and bottom opening;
a support shaft inserted in said bearing hole;
a light detector for receiving said light reflected from said information recording medium and outputting information about inclination of said objective lens relative to said information recording medium on the basis of said light received; and
an inclination drive unit for, according to said information about said inclination, turning said lens holder on a first axis perpendicular to said support shaft.

Claim 2. (Currently Amended) An optical head device comprising:
an objective lens for bringing light emitted from a light source into focus on an information recording medium;
a lens holder for holding said objective lens, said lens holder having a bearing hole formed along a direction parallel to an optical axis of said objective lens, the bearing hole having a diameter that gradually increases while approaching the bearing hole's openings from the bearing hole's center;
a support shaft inserted in said bearing hole;

a light detector for receiving said light reflected from said information recording medium and outputting information about inclination of said objective lens relative to said information recording medium on the basis of said light received; and

an inclination drive unit for, according to said information about said inclination, turning said lens holder on a first axis perpendicular to said support shaft-, wherein

said bearing hole has a wall that is generally circularly arcuate in cross-sectional shape.

Claim 3. (Original) The optical head device according to claim 2, wherein an equation $(A-B)-L \times \tan \theta$ is generally satisfied, where A is a hole diameter of said bearing hole in the vicinity of said opening, B is a hole diameter of said bearing hole in the vicinity of said center, L is a length of said bearing hole along said optical axis of said objective lens, and θ is a maximum amount of correction on the turning of said lens holder.

Claim 4. (Original) The optical head device according to claim 3, wherein said $(A-B)$ equals approximately to $88 \mu m$ and said L equals approximately to 5 mm.

Claim 5. (Currently Amended) An optical head device comprising:
an objective lens for bringing light emitted from a light source into focus on an information recording medium;
a lens holder for holding said objective lens, said lens holder having a bearing hole formed along a direction parallel to an optical axis of said objective lens, the bearing hole having a diameter that gradually increases while approaching the bearing hole's openings from the bearing hole's center;
a support shaft inserted in said bearing hole;

a light detector for receiving said light reflected from said information recording medium and outputting information about inclination of said objective lens relative to said information recording medium on the basis of said light received; and

an inclination drive unit for, according to said information about said inclination, turning said lens holder on a first axis perpendicular to said support shaft;

wherein said inclination drive unit includes:

electromagnetic drive means comprising a first element mounted on said lens holder on a second axis perpendicular to both said support shaft and said first axis perpendicular to said support shaft, and a second element located opposite said first element; and

a magnetic material fixedly mounted on said lens holder in close vicinity to said second element of said electromagnetic drive means.

Claim 6. (Original) The optical head device according to claim 1, further comprising:

a fluid provided in said bearing hole.

Claim 7. (Original) The optical head device according to claim 6, wherein said fluid includes a magnetic fluid.

Claim 8. (Original) The optical head device according to claim 7, wherein said lens holder further includes a permanent magnet located opposite said bearing hole and said magnetic fluid.

Claim 9. (Currently amended) An optical head device comprising:
an objective lens for bringing light emitted from a light source into focus on an information recording medium;

a lens holder for holding said objective lens, said lens holder having a bearing hole formed along a direction parallel to an optical axis of said objective lens, the bearing hole is formed such that a shape from the bearing hole's center-bottom opening to the bearing hole's top openings is a ~~cone~~-parabolic shape such that a diameter of the bearing hole's top openings and bottom opening is are larger than ~~that of the~~ diameter at the center distance between the bearing hole's-center top opening and bottom opening;

a support shaft inserted in said bearing hole; and
a fluid provided in said bearing hole.

Claim 10. (Original) The optical head device according to claim 9,
wherein

said fluid includes a magnetic fluid.

Claim 11. (Original) The optical head device according to claim 10,
wherein

said lens holder further includes a permanent magnet located opposite
said bearing hole and said magnetic fluid.

Claims 12-19 (Canceled)